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ABSTRACT

A study examined the effects of peer tutoring on the achievement of fourth grade remedial readers. Subjects (N=30) were randomly assigned to a control or an experimental group, both of which were pretested using the "Gates-MacGinitie Reading Tests" and both received regular classroom instruction. The experimental group received tutoring for ten weeks by eighth grade students in an afterschool setting. At the end of ten weeks, both groups were posttested. The results indicated that peer tutoring was an effective strategy for improving the achievement of remedial readers since raw scores for the experimental sample were higher than those for the control sample. (Tables of data are included, and the raw posttest scores for each group are appended.) (Author/HTH)

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THE EFFECTS OF PEER TUTORING ON STUDENT ACHIEVEMENT

BY

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ABSTRACT

This study was concerned with adding to a considerable body of research already in place regarding the effects of peer tutoring on the achievement of fourth grade remedial readers. Thirty students were randomly assigned to either a control or an experimental group. Both samples of fifteen were pretested using the Gates-MacGinitie Reading Tests and received regular classroom instruction. However, the experimental sample was tutored for ten weeks by eighth grade students in an afterschool setting. After ten weeks, a posttest was administered to both groups. An analysis of the data suggested that there was some evidence that peer tutoring was an effective strategy for improving the achievement of remedial readers since raw scores for the experimental sample were higher than for the control sample.

TABLE OF CONTENTS

Abstract		i
List of Tables		iii
Article 1	The Effects of Peer Tutoring on Student Achievement	1
	Hypothesis	2
	Definitions and Assumptions	3
	Limitations and Delimitations	3
	Procedures	3
	Analysis of Data	5
	Conclusions and Implications	9
Article 2	Peer Tutoring and Student Achievement: Related Research	12
References		21
Appendix		24

LIST OF TABLES

Table I.	Vocabulary Pretest Means, Standard Deviations and t Values	5
Table II.	Vocabulary Posttest Means, Standard Deviations and t Values	6
Table III.	Comprehension Pretest and Posttest Means, Standard Deviations and t Values	6
Table IV.	Total Reading Pretest and Posttest Means, Standard Deviations and t Values	7
Table V.	Pretest and Posttest Means and t Values of the Control Sample	7
Table VI.	Pretest and Posttest Means and t Values of the Experimental Sample	8
Table VII.	Conversion of Mean Raw Scores to Grade Equivalent Scores for Total Reading	8

The 1980's finds American elementary school students in a social situation that did not exist a generation ago. The possibility for a supervised homework time for elementary students has been lessened greatly by the changes that have taken place in the family structure. Because more women are entering the workplace either due to economic necessity or the need for personal fulfillment and because there has been a decided increase in the number of single parent families; we are faced with the phenomenon of the "latchkey" child. Peer tutoring may be a strategy for dealing with this problem.

The process of peer tutoring is not a new idea. Children have been helping and teaching each other since the beginning of recorded history. The one room schoolhouse of the Colonial period frequently utilized older children to work with younger children. In a review of early references to children teaching children, Gartner, Kohler and Riessman (1971) discuss the "monitoring system" proposed by Joseph Lancaster (1806). Under Lancaster's system, children were highly successful in teaching other children. In another reference, Gartner, Kohler and Riessman (1971) refer to work published by Comenius (1849) who recommended that students who wanted to make progress in a subject should arrange to give lessons to other students.

A study done by Walberg (1984) found that personalized

instruction such as tutoring increased learning. Since students in grade four are in a transitional stage from learning to read to reading to learn, those students identified as remedial often need help understanding and completing homework assignments. Recent research has shown that there is improvement in achievement for both the tutor and the tutee. A study done by Reed (1976) found that as a result of tutoring, tutors reinforced their own knowledge. A study done by Blaney, Stephan, Rosenfeld, Aronson and Sikes (1977) showed that when students take on the role of teacher, student motivation increases. Studies conducted by Elliott (1973, 1977) and Hayes (1978) resulted in the conclusion that the individual assistance and attention which tutees receive help them meet their individual needs, bring up achievement levels and promote self-confidence. If eighth grade students could be trained and utilized as cross-age tutors, the possibility of an inexpensive yet effective means of increasing student achievement could be realized.

HYPOTHESIS

This study was developed primarily to provide additional evidence concerning this topic. It was hypothesized that there would be no significant difference in reading achievement between two samples of fourth grade children who were differentially treated (tutored vs. not

tutored).

DEFINITIONS AND ASSUMPTIONS

Peer Tutors were defined as eighth grade students who were trained during the seventh grade in interpersonal communications skills and trained to tutor twice a week for two weeks in one hour training sessions.

Tutees were defined as remedial fourth grade students identified by classroom teachers as needing assistance in understanding and completing homework assignments in reading based areas.

It was assumed that a rapport conducive to learning would be established between peer tutors and tutees.

LIMITATIONS AND DELIMITATIONS

The study was limited to fifteen peer tutors and fifteen tutees. The results of the study were limited by attendance in school on tutoring days for both peer tutors and tutees.

The data was gathered from students from one New Jersey urban elementary school and the results were limited to this sample.

PROCEDURES

Two homogeneously grouped fourth grade classes from one elementary school representing a total of fifty-eight

students were selected to participate in this study. The experimental group consisted of fifteen tutees who were randomly selected from a group of thirty fourth grade students identified by their classroom teachers as having a need for additional support in understanding and completing homework assignments in reading based areas. The remaining fifteen students made up the control group.

Fifteen peer tutors were chosen from a group of twenty eighth grade students who were trained the previous year in interpersonal communications skills during one hour sessions held weekly over a period of eight months. They were chosen to participate on a volunteer basis and only those students interested in tutoring were involved in the study. The peer tutors were trained in tutoring skills twice a week for two consecutive weeks in one hour training sessions prior to tutoring.

Both the experimental and control groups were pretested for vocabulary and comprehension using the Gates-MacGinitie Reading Tests - Level D - Form 1 and tutor-tutee pairs were established on a matched sex basis as much as possible. Each of the fifteen fourth grade students selected for tutoring was given supplementary help for two sixty minute sessions per week for a total of twenty hours. The remaining fifteen fourth graders in the control group were left untreated. Tutoring sessions were held after school within the confines of the school building but out-

side the regular classroom setting. Two teachers trained in interpersonal communications skills were in attendance and acted as supervisors and support personnel for the eighth graders at all twenty tutoring sessions. After ten weeks of tutoring, the Gates-MacGinitie Reading Tests - Level D - Form 2 was administered for vocabulary and comprehension to both the experimental and control groups as a posttest instrument.

ANALYSIS OF DATA

Tables I. and II. compared the pretest and posttest scores for both the experimental and control groups on

Table I.
Vocabulary Pretest Means,
Standard Deviations and t Value

	M	SD	t
Experimental	12.06	2.9	.13
Control	11.93	2.5	

the vocabulary subtest. Table I. indicates that the samples were closely matched in vocabulary abilities at the outset of the study. The mean differences between these samples was negligible as attested by the t of .13.

Table II. indicates that the samples were not as

Table II.
Vocabulary Posttest Means,
Standard Deviations and t Value

	M	SD	t
Experimental	15.5	3.35	1.5
Control	13.5	3.53	

closely matched in vocabulary abilities after treatment but that the difference between the means was not statistically significant.

Table III. compared the pretest and posttest scores

Table III.
Comprehension Pretest and Posttest
Means, Standard Deviations and t Values

	M	SD	t
Pretest			
Experimental	11.0	2.16	.417
Control	11.33	2.02	
Posttest			
Experimental	13.42	3.06	1.42
Control	11.93	2.35	

of both the experimental and control samples on the comprehension subtest. The mean growth of 2.42 in raw score for the treated sample as opposed to a mean growth of .6 for the untreated sample was not statistically significant.

Table IV. compared the pretest and posttest total

Table IV.
Total Reading Pretest and Posttest
Means, Standard Deviations and t Values

	M	SD	t
Pretest			
Experimental	23.06	4.3	.127
Control	23.26	4.05	
Posttest			
Experimental	28.92	5.32	1.67
Control	25.73	4.61	

reading scores of the two samples. Both showed a higher total reading score in the posttest than in the pretest instrument but again, there was no evidence of significant growth of one group over another as the t values reported were .127 and 1.67.

Tables V. and VI. showed that no significant raw score

Table V.
Pretest and Posttest Means
and ts of the Control Sample

	Pretest	Posttest	
	M	M	t
Vocabulary	11.93	13.53	1.369
Comprehension	11.33	11.93	.7243
Total Reading	23.26	25.73	1.484

Table VI.
Pretest and Posttest Means and
ts of the Experimental Sample

	Pretest	Posttest	
	M	M	t
Vocabulary	12.06	15.5	3.318
Comprehension	11.0	13.42	1.971
Total Reading	23.06	28.92	3.233

differences were apparent for the control sample but statistically significant differences between mean raw scores were found in the comparison of the pretest to posttest results for the experimental group in the vocabulary subtest, the comprehension subtest, and the total reading scores.

Table VII. seems to support this finding. A conversion

Table VII.
Conversion of Mean Raw Scores to Grade
Equivalent Scores for Total Reading

	Pretest		Posttest	
	RS	GE	RS	GE
Experimental	23	2.5	29	3.3
Control	23	2.5	26	2.8

of raw scores to grade equivalent scores for total reading

showed a mean growth of 8 months for the experimental sample while the control sample showed a mean growth of only 3 months.

CONCLUSIONS AND IMPLICATIONS

This study was concerned with the effect of tutoring by eighth grade students on the achievement of fourth graders. Tutees were pretested using the Gates-MacGinitie Reading Tests, tutored for ten weeks and finally post-tested using an alternate form of the same standardized testing instrument.

There did not appear to be any significant difference in reading achievement between the experimental and control samples. An analysis of pretest scores indicated that both samples were closely matched in ability prior to tutoring and a comparison of posttest scores showed growth in vocabulary, comprehension and total reading for both groups. No statistically significant growth was evidenced in the experimental sample over the control sample.

A significant difference did appear however in the comparison of pretest to posttest raw scores for the experimental sample. The treated group made greater gains in vocabulary, comprehension and total reading achievement. Because no similar difference was found in the comparison of the pretest to posttest results for the control group, it would appear that the tutoring sessions contributed to

the growth of the treated sample.

Further supporting evidence was found in the conversion of mean raw scores for total reading into grade equivalent scores for both groups. The experimental sample showed a gain of 5 months more than did the control sample.

Although the evidence in this study did not entirely support the use of peer tutors to improve reading achievement, enough evidence was provided to conclude that peer tutoring did make a difference in the achievement of the experimental sample. Given the brief duration of the tutoring project, it would be interesting to see what the effects of a full year tutoring program would have on the reading achievement of fourth graders.

The implications for education are far reaching. Because of the socially significant changes in family structure, schools in the 1980's are becoming after school child care centers. Peer tutoring programs could provide after school time that would benefit tutors, tutees, parents, and teachers alike. As we enter a more mechanized and computerized era, opportunities for after school employment for teenagers have become more and more scarce. Careful consideration should be given to utilizing the valuable yet cost efficient resource that our older students represent.

PEER TUTORING AND STUDENT ACHIEVEMENT: RELATED RESEARCH

Educators have always been concerned with the individual needs and interests of students. Many strategies have been devised in an attempt to improve these specific and varied instructional needs. In a changing social system such as exists in our country today, a tried and proven strategy may be an inexpensive solution to a new problem. A review of the research shows that the training and use of cross-aged, cross-grade tutors could provide supplemental individualized instruction to disabled readers as well as produce positive attitude and self-concept changes in both tutors and tutees.

The research seems to be divided into two major areas. First, many studies seem to concentrate on the specific academic gains made by tutors and/or tutees as measured by a variety of instruments. Second, many studies focus on gains in the affective area for tutors and/or tutees.

Effects of Tutoring on Reading Achievement

Young children constantly teach each other to do a variety of things. Through their play they learn from each other. Successful sharing, communicating and interacting are learned along with ball playing, building and the rules of the game before children ever enter a classroom. Recent evidence confirms the beneficial effects on achievement of students who acted as teacher. In an experiment

set up by Blaney, Stephan, Rosenfield and Aronson (1977), fifth grade students were assigned to teach a brief unit of information in social studies. The twenty-five participants were randomly selected from a sample of 58 students with the remainder acting as a control group. The results showed that the students who had been involved in the teaching activities scored significantly higher on a test designed to measure learned information than those who had not been teachers.

Other studies suggested that peer tutors may be as effective and more effective in teaching remedial readers than teachers in a traditional classroom setting or even resource room teachers working with small groups. An extensive study done by Sindelar (1982) examined the effects of tutorial reading programs on fifty-three elementary aged disabled readers. The purpose of the study was to compare the performance of students who received remedial reading instruction from tutors to the performance of students who received remedial reading instruction from resource teachers in small groups. The experimental procedure was a pretest-posttest control-group design with random selection of tutees. The tutors were recruited from among the most competent readers at the intermediate grade level and were trained in two ninety minute sessions. The tutoring model consisted of twenty fifteen minute lessons using a variety of instructional techniques. The results

of the study showed that tutored children scored as well as students who received small group instruction from resource teachers.

Hill and Sardar (1981) conducted a study wherein sixth grade students worked with second and third graders. Thirty-eight trained tutors were involved in teaching thirty-eight randomly selected tutees identified as remedial. The results showed the effectiveness of peer tutoring and indicated that tutoring increased motivation and self-direction of the second and third graders in the tutoring program beyond that of students in the control group who were instructed in a traditional classroom setting.

Although gains in reading achievement by tutees has been the main thrust of many studies, other research has focused on improvements in achievement for the the tutor and the tutee. A study done by Reed (1976) showed that high school students who were trained and acted as tutors reinforced their own knowledge by preparing materials to teach others. Consequently, their self-confidence and self-esteem also were enhanced.

Another study that reported on learning gains for tutors was done by McWhorter and Levy (1970). In this study, college level low-reading-ability tutors worked with low-reading-ability elementary students in grades four to six. After one semester of tutoring in reading,

the tutors noted gains at a mean of 2.4 years in reading ability as measured by a standardized posttest. A similar study done by Cloward (1967) reported gains in scores on reading achievement tests for high school low-reading-ability tutors after working with low ability elementary students in reading.

Because of the apparent success of peer tutoring shown by the research, many large scale tutoring projects began to emerge in the 1960's. Mobilization For Youth was a tutoring project begun in New York City that used high school students to tutor fourth and fifth graders in reading for two to four hours per week. The project ran for seven months and both the tutor and tutee groups were typically black or Puerto Rican American. Another after school program, Youth Tutoring Youth, was introduced in Newark and Philadelphia. High school students involved in the Neighborhood Youth Corps were trained to tutor younger underachieving students in elementary ghetto area schools and were paid a salary. A smaller scale tutorial program, Each One Teach One, was conducted in Yonkers where students were tutored and served as tutors for much of the school day. This program was developed to involve all students in teaching and learning.

Lippitt and Lohman (1965) studied several of these large scale peer tutoring projects that were established in the early 1960's. The projects studied were cross-age

in focus and involved junior and senior high school students tutoring elementary students and sixth graders working with kindergarten students. Some of the projects were school based, some based in a camp-like setting, and some involved centers set up specifically for tutoring. The results of the study showed that younger children model the positive behaviors of older children and that tutors as well as tutees learn materials more thoroughly in a tutoring situation than in a traditional classroom setting.

Effects of Tutoring on the Affective Domain

Although the initial purpose of establishing tutorial programs was to increase student achievement, it became apparent that other benefits were being realized as well. Both the tutors and tutees seemed to have developed more positive attitudes towards school, the subject matter being learned, and themselves.

A study done by Price and Dequine (1982) examined a tutorial program in which low-achieving junior high school students served as reading tutors for non-English speaking students. The results not only showed gains by ESL students but the tutors experienced significant gains in reading skill, vocabulary, and most importantly, self-esteem.

Bierman and Furman (1971) studied a tutoring model that involved one hundred twelve fourth graders enrolled in a foreign language program. One half of the students

were randomly selected to act as tutors while the remaining half were assigned as tutees. The results showed that the tutors tended to form more positive self-concepts and their role as tutor had a significant impact on their attitudes. In an inventory of characteristics, the students assigned qualities like competence and prestige to the tutor role and subsequently the tutors applied these characteristics to themselves. Even though the tutees scored higher on achievement tests than the tutors, they did not feel as smart, quick or competent as the tutors did.

An extrapolation of the data from seven large scale studies was done by Gartner, Kohler and Riessman (1971). They identified the five types of children who seem to benefit most from peer tutoring programs that involve student-to-student contacts. More extensive gains were noted for: (1) children who had difficulty relating to their peers, (2) the youngest child in a family, (3) the oldest child in a family, (4) children with little experience working with others and (5) children with little contact with older, same-sex children. Although reading achievement was greater for tutored students than for non-tutored students, the major characteristic of this study was its focus on the affective variables involved rather than the academic variables.

Some studies have even shown positive effects of peer tutoring on behavior. A study done by Lazerson (1980)

involved sixty students identified as either aggressive or withdrawn. Each was paired with another student with a similar problem. A control group that was not involved in tutoring was also identified. At the end of five weeks, students in the experimental group showed higher gains in self-concept than the control group and made greater improvements in behavior. It was also noted that the experimental group showed an increased interest in school and in the learning process.

As recently as October 1985, The Reading Teacher proported peer tutoring as a viable reward system for improved classroom behavior in grades one to six. Klumb (1985) reported that peer tutoring improved school behavior, reading achievement, attitudes and self-confidence. In classrooms with a wide range of reading abilities, students who are allowed to help each other showed improvement in all areas including classroom behavior.

In conclusion, a meta-analysis by Cohen (1982) examined sixty-five tutoring studies of many different types and classified the effects of tutoring programs into three areas: (1) student achievement as measured on tests, (2) student attitudes toward the subject matter being studied, and (3) effect on student self-concept. Forty-five of the fifty-two studies that dealt with student achievement reported finding that students who were tutored performed better than students in a conven-

tional classroom. In all eight of the studies that examined student attitude toward subject matter, it was found that student attitudes were more positive in classrooms with tutoring programs than in classrooms without them. Finally, of the nine studies that reported on the effect of tutoring on tutee's self-concept, seven found more favorable self-concepts in students being tutored than in students conventionally treated.

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APPENDIX

RAW SCORES FOR CONTROL SAMPLE

Subject	Vocabulary		Comprehension		Total Reading	
	pre-test	post-test	pre-test	post-test	pre-test	post-test
1	13	16	13	14	26	30
2	13	16	10	10	23	26
3	12	11	14	15	26	26
4	9	10	9	10	18	20
5	10	8	8	9	18	17
6	8	12	7	9	15	21
7	10	13	11	11	21	24
8	10	10	10	12	20	22
9	14	18	13	10	27	28
10	15	16	12	12	27	28
11	18	20	12	14	30	34
12	12	12	13	13	25	25
13	11	14	13	16	24	27
14	10	18	12	9	22	27
15	14	9	13	15	27	24

RAW SCORES FOR EXPERIMENTAL SAMPLE

Subject	Vocabulary		Comprehension		Total Reading	
	pre-test	post-test	pre-test	post-test	pre-test	post-test
1	12	14	14	17	26	31
2	9	12	8	11	17	23
3	9	13	8	12	17	25
4	7	10	8	9	15	19
5	10	10	11	12	21	22
6	12	16	8	8	20	24
7	14	18	14	18	28	36
8	16	19	12	14	28	33
9	19	22	11	14	30	36
10	13	17	12	16	25	33
11	11	14	13	17	24	31
12	10	17	12	14	22	31
13	13	17	9	10	22	27
14	12	18	13	16	25	34
15	14	n/a	12	n/a	26	n/a

n/a - subject moved and score not available